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Retouching



Meyer Both Company, Chicago
= Department of Art Instruction =



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Photo Retouching

Instruction in Handling
Mechanical and Pictorial
Photographs, Back-
grounds, Opaque Blend-
ing and the Use and Care
of Air Brushes

MEYER BOTH COMPANY
Department of Art Instruction
CHICAGO ILLINOIS

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Series C

PHOTO-RETOUCHING

Introduction

The increasing use of retouched photos as mechanical illustrations in advertising has made photo-retouching a most important department of commercial art principally because it is an economical method and also because it gives an accurate and reliable representation of the object. It is less expensive to photograph an elaborate subject with small details than to make a drawing of it, and a photograph usually presents a more realistic representation of a complicated and intricate object than could be obtained by a wash drawing. It is generally found necessary to call in the aid of the photo-retoucher, however, in order to strengthen uncertain details, eliminate unnecessary, improve light and shade, smooth rough surfaces and remove blemishes.

In order that the term "photo retouching" may be perfectly understood, we will state that the retouching referred to is the retouching of photographic prints and not the retouching of negatives, which is an entirely different matter. The photographic negative is a glass plate coated on one side with an emulsion on which the photographic image is impressed by the action of light. The retouching of this negative is done by an artist who is called a retoucher. This work is done on the negative in the photograph gallery before the print is made, and is a class of work that is handled by the photographer, rather than by an art department. So the student will understand that the term, photo-retouching, refers to the retouching of photographic prints or positives, and not to the retouching of the negatives from which the prints are made. The camera has a way, sometimes, of bringing out undesirable matters, and even exaggerating them. Hence the retoucher generally has considerable work to perform on the photographic print, especially if it is made from a negative of average or mediocre quality. In some cases where a photograph is of excellent quality, and brings out naturally and distinctly the various points desired by the advertiser, it may not be desirable to do any retouching, except, possibly, for adding, what is known as, the vignette, the meaning of which will be explained later.

The student must bear in mind that retouching must be done very carefully, *using color to match* the tone or color of the photograph and causing the retouching to appear as natural and life-like as the photo itself. When the retouched photograph is reproduced by any process of photo-reproduction, the execution of the retouching should not be noticeable, but should appear as photographic as the remainder of the photo.

It is possible for the photo-retoucher, by keeping

in mind his sense of the beautiful and artistic, and the principles of line and composition as explained elsewhere, to considerably improve the appearance of the photograph and add those little touches of art which mark the difference between the commonplace and the refined.

It must be remembered that most of the artistic effect of a photographic illustration is placed there by the retoucher, although much can be accomplished in the first place, by a proper posing of the subject before the camera, especially a figure subject.

From the previous remarks, the student can readily see that the main objects of good photo-retouching are, to bring out details more clearly, to improve the value of tones, which in this case generally means increasing the contrasts—that is, making the dark parts darker and the light parts lighter (although considerable judgment and discretion must be used in this) and improving the artistic appearance of the photograph generally.

After the details of a photograph have been worked up, and the tone values improved, some attention must be paid to the background; by referring to Chart 1, accompanying this section, the student may see the various styles of background treatment. They consist of *outline*, *outline* and *vignette*, *full vignette*, *snappy vignette*, *square finish*, and *outline top* and *square at bottom*.

Outline is accomplished by painting out the background very carefully with white, right up to the edge of the subject, thereby allowing the illustration to stand out clearly, sharply and distinctly.

Outline and *vignette* means to be partly outlined as just explained, and the remainder to be gradually softened and blended into the white background. This is generally accomplished in a very smooth manner by means of the air brush, the operation of which will be explained later, but at present will be accomplished free hand by means of the brush.

Full Vignette means to shade off the entire background softly into the white, which, of course, means the white paper on which the reproduction will be printed.

Snappy Vignette means to outline portions of the vignette in a snappy, artistic way, which will depend largely on the individuality of the artist, and afterward softening those outlined portions so as to blend into the background, but in such a way as to leave a sharp edge to the vignette. This style of vignette will be easily understood from the illustration on the accompanying chart and is more easily printed than the very soft vignette.

Square finish means that the photograph will have the original background left in as it is, without any outlining or vignetting.

Outline top and *square at bottom*, will be readily understood from the chart, as having the upper portion of the picture outlined in white and the lower part left with the square finish. These descriptive terms are not only used in retouching photographs, but are used considerably in describing the treatment of most illustrative matter; hence it is important that the student become accustomed to these terms and thoroughly understand them.

It must be remembered that considerable judgment should be used in selecting the style of background for certain subjects; for instance, a photograph to be used for a cover illustration or frontispiece, could be handled in a more snappy, vigorous fashion than one intended for the inside pages of a catalog or book.

A cover illustration or a frontispiece is generally made forcibly attractive, in order to command so much attention that one will not fail to turn to the inside pages of the book and peruse its contents. The illustrations on the inside should be so well detailed and pictorially presented that one cannot fail to be impressed with the good points of the articles that are being advertised. The object of advertising is to sell goods; the student must therefore bear in mind that the emphasizing of the selling points of the article being advertised, by good, intelligent retouching and art work, is the main object to be attained by the artist.

It is really surprising to see what wonderful results can be accomplished by good retouching. A very ordinary looking photograph can, by skillful treatment, be turned into a most attractive advertising illustration, full of interest and commercial value.

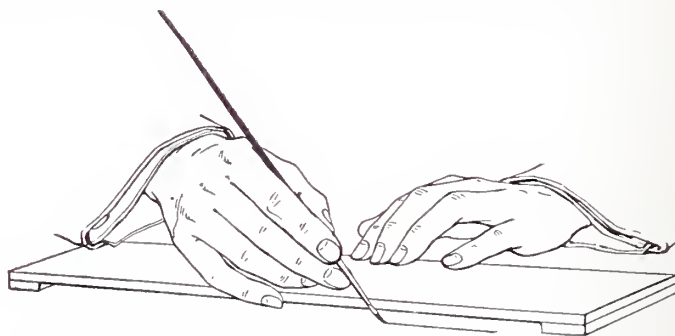
Vignetting, as previously referred to, is used for many purposes. In retouching the photograph of a machine, a portion of the floor on which the object stands is generally drawn and softly vignetted, and frequently a little softly vignetted background is used, giving a pleasant effect, and very often emphasizing a portion of the machine.

The background of a portrait is generally vignetted, being usually worked up dark against the light side of the face and light against the dark side to increase contrast. The various tones are blended together in a pleasing artistic manner, which may be easily acquired with a little practice. *Vignetting* gives a light, airy effect to the work, and removes that heavy and set appearance which is so undesirable. It must be remembered that photo-retouching requires a great deal of fine, careful work, for all details must be worked up

so that they are clear and natural-looking. The retoucher must learn to accomplish his work with the finest touch and truest accuracy; all lines and edges must be absolutely sharp and clean; all tones evenly distributed, and all blending done smoothly and well. The student must be patient and learn to do the work thoroughly and very carefully, disregarding, at the present time, the question of the amount of time necessary to complete the work.

The main point at first is to produce good, careful work, and when that is accomplished, the question of speed may be considered. Speed without quality means nothing in first-class photo-retouching. The instructions telling what retouching is required to be done to the photograph, are generally given to the artist by the foreman of the art department. He receives them from the salesman, who has already made himself acquainted with the desires of the advertiser. Should the artist be working for the advertiser directly, he must be thoroughly posted on the various points that should be brought out strongly, and be sure that he understands instructions and follows them exactly.

The student is furnished a combination straight edge and hand rest, used to raise the hand above the work, so that the wet color used in retouching the photo will not be smeared or damaged by the hand in working on other parts of the subject.



This illustration shows how the hand rest can be used to draw straight lines in color with the brush, it being a very convenient way of drawing straight brush strokes for lines or for free-hand brush shading on straight surfaces. The student has also received a T square and a triangle known as a 30° by 60° triangle, which will be of great service. We will now mention the colors used in photo retouching and describe the methods of mixing them.

Matching of Tones

The majority of prints turned into the art department for retouching are generally black in color. These prints are made on Velox, Azo, Cyko, etc., being known in the photographic business as "developing out" papers, or papers on which no image is visible until developed. Occasionally prints of a brownish and others of a reddish color are brought in, but in most cases they

are black, as before stated. Consequently, the tone values of the black prints being black, gray and white, we must use color to match these tone values. Our colors, therefore, will be Lamp Black, White, Retouch Brown and Yellow Ochre, or some similar warm color. We must use a little Yellow Ochre to warm up the grays we mix otherwise they will be somewhat bluish and too cold in tone. You will notice that the grays in a black and white photograph are generally slightly warmish in tone, and not bluish. The bluish and cold tone would reproduce much lighter than its usual appearance on the retouched photograph. The addition of the Yellow Ochre, to kill this bluish tone, will allow you to mix a gray that will exactly match the grays in your photograph, and will give you a result in retouching that will reproduce perfectly. Experienced retouchers frequently use other colors to get this effect, such as Raw Umber, Burnt Sienna and even Chrome Yellow, but Yellow Ochre will answer our purpose just as well. You must exercise your judgment in deciding *how much* yellow to use, and do a little experimenting in order to find an exact match to the grays in your photograph but you must not neglect this important matter.

To mix a warm gray, take a small quantity of white and add enough Lamp Black and Yellow Ochre to produce the desired color. Apply a little of the color with your brush to the photograph, allow it to become dry, and then see how near you have matched the gray tone of the photograph. Of course, more black or more white, added, will make it lighter or darker, as the case may be. Care must be taken not to use too much Yellow Ochre as the gum, in an excessive amount of it, sometimes causes the color to dry out darker than intended. To match the darkest glossy black on your photo, you must use the Retouch Brown, and for intermediate blacks, not so dark, you must add a small quantity of Lamp Black to the Retouch Brown, but always be sure to wait until the color dries before you decide whether you have matched the photographic color or not. An ordinary china plate or saucer will do to mix your color on; or you may take a small sheet of glass with white paper pasted on the reverse side so you can clearly see the shade of the color you are mixing. Artists generally use a palette knife to mix their color; this is of flexible steel, and is not very expensive. A suitable vessel to contain water should be at hand for moistening color and for washing brushes. The water should not be allowed to become so dirty as to contaminate the white you are using. Procure a piece of blotting paper or soft linen for removing excess water from the brushes and also some absorbent cotton for cleaning off the print. With these preparations, we are ready for our first experiences in photo-retouching.

Mounting the Photograph

One should never attempt to retouch an unmounted print of the usual thickness, because the wet color would cause the surface of the print to buckle up or blister, making it inconvenient to work upon, and unsatisfactory for the purpose of reproduction. Some prints are made of double thickness and can be worked upon without difficulty, but others must be mounted.

To mount the print, immerse it in cold water for a few moments, lay it face down on clean paper or blotting paper, blot off the water and coat it thoroughly with paste by means of a paste brush. The paste should not be too thin, and care should be taken that no small lumps of paste, grains of dirt, hairs from the brush or anything but a thin layer of paste is on the back of the photo. Should any be seen, carefully pick them off or they will be noticeable as bumps on the surface of the mounted print. Take the pasted print by the corners, place it, picture side up, on your cardboard mount, and with a wad of absorbent cotton carefully rub it down in place, being sure that all the edges are pasted down tight. After wiping off with wet cotton any paste that may have adhered to the face of the print, set it aside to dry. If these instructions have been carefully followed, the result will be a successfully mounted print. The student should practice mounting sheets of paper instead of photographs until he learns to do it neatly and successfully.

In case the print has not been well pasted, it can always be removed by soaking the mounted print in water long enough to soften up the paste, when it can be carefully pulled off the mount, repasted and mounted over again. The object of wetting the print previous to mounting, is two-fold: first, the dampness of the print keeps the paste from drying too quickly and allows sufficient time to place the pasted print on the mount before the paste becomes too dry. Secondly, the print expands on account of being wet, and after being pasted and placed in position, the drying out, which causes it to shrink or contract, makes a tight job of pasting. In mounting a large photograph the shrinkage is so great that it bends the mount, which has to be counteracted against by pasting a sheet of paper on the back of the mount. This as it dries, shrinks and pulls the other way, and when it is completely dry should hold the cardboard mount flat and even. These instructions not only apply to the mounting of photographs, but also apply to the mounting of any papers of any size.

Preparing the Surface

All photographic prints, especially those with a very glossy surface, seem more or less greasy, and will not take color readily. Some retouchers rub

a little diluted acetic acid over the print to remove the grease. Others use diluted ammonia in the same way. The best and most reliable method for cleaning and preparing the surface of a photograph for retouching, is to first place a piece of cotton in the mouth and well moisten it with saliva, then thoroughly rub with it, the entire surface of the print. This does not sound very sanitary, but nevertheless has never been equaled as a method of preparing the surface of a photographic print for receiving retouching. For the purpose of retouching, the mounted photograph should be tacked to the drawing board by thumb tacks, and after having the surface treated for the removal of grease, is ready for retouching.

Consistency of Color

Do not use your retouching color too thin. A proper consistency of color would be the thickness of heavy cream. The color used from the brush must be thick enough to cover the surface well, and must not flow from the brush too easily, but if too thick it will appear streaky when dry and may show brush marks, which are undesirable. As the work proceeds should any of it prove unsatisfactory, it is better to remove the color by wiping it off with a piece of wet cotton and start over again. You will notice that your color when dry will not be as glossy as the photograph. This cannot be helped, and will not interfere with the reproduction, if the tones are well matched. There is one exception to the colors drying out dull, and that is the Retouch Brown, which always dries glossy on account of the gum in it,

Warm Tones

The tone-matching of photographs that are not black in tone, such as those in the warmer tones, known as sepia, solio, etc., is merely a matter of mixing color to match the color of the photo. At the present time it is very seldom the retoucher is called upon to retouch other than black prints, the operation of which we have explained in detail. Should it be necessary at any time to retouch any photographs of a brown or warmish tone, the colors may be mixed by using the regular water colors in tubes, using such colors as Cologne Earth, Sepia, Vandyke Brown, Burnt Sienna or any other warm colors that will mix to match the color of the photograph.

On charts 2 and 3, which accompany this section on Photo-Retouching, will be found several examples, such as come within the usual scope of that line of work. On each of these subjects we present simple instructions for handling them by the usual retouching methods. As the prints, sent you to be worked up similarly, are black and white, it is self-evident that the only colors to be used in retouching these are black, white and yellow ochre; so you will use the lamp black, white and yellow

ochre sent you, which are the identical materials used in retouching the original copies. In regard to handling the opaque color in this work we refer the student to our article entitled "Opaque," in section 2.

This article gives complete instructions for mixing your colors on the color slab furnished, and describes the mixing of five tones (See example B, Fig. 17, Chart 1, Sec. 2.) This scale of five tones is the correct arrangement to be used in retouching, and is the system you must use for this kind of work. The simplicity of this scale system for photo-retouching renders it particularly desirable to the student; without it, the beginner would be continually floundering in a vain search for the necessary tone and in his efforts to mix it, whereas, with our simple five tone scale already mixed, it is a very easy matter to determine which, of the tones should be used.

Upon examination it will be found that a black and white photograph will rarely contain any more definite tones than the five we have given, for we have here, in addition to our white at one end of the scale and our black at the other end, three intermediate tones; should we need a tone slightly different, it is easy to mix it from the tones on our slab to suit any necessity. Always bear in mind that the fewer tones you use, and the more simple you make the work, the more effective it will be, as a specimen of good photo-retouching.

Opaque Blending

In regard to shading or blending in opaque, it must be admitted that it has its difficulties even to the experienced professional, although some acquire the knack easier and quicker than others. Being a matter in which practice promotes proficiency, it is necessary to give this matter considerable attention in the form of constant practice, and it will be well for the student to practice blending on any waste or discarded pieces of cardboard or paper with suitable surface, in order to develop proficiency. Blending can only be accomplished when the tones to be blended, or shaded are in a moist or wet condition. For instance, if you apply a dark tone to your drawing on the side of your work that is to remain dark, according to the laws of light and shade as discussed in previous sections, and then apply a lighter tone adjoining it, on the side approaching the part that is to be lighter, you can, while these tones are still wet, blend or mix them together with a clean moist brush that has previously had all opaque color removed from it by washing it out in your water receptacle. This must be done without much loss of time because the opaque tones applied by you are rapidly drying. If the paper, or material on which you are working, has a smooth surface, the applied opaque will dry more rapidly than if the

surface had a rougher texture. The reason for this is, that the minute depressions on the surface of the rough paper, form receptacles that hold sufficient wet pigment to overcome evaporation of the moisture and the absorption of it by the paper. If the paper has a smooth surface, it only retains a thin coat of the pigment and consequently loses its moisture very speedily by evaporation and absorption.

The process of blending, just mentioned, may be described as a direct method in which the blending is accomplished immediately after the application of the opaque, and is the best method to acquire.

Another method is to apply individual tones from dark to light, or vice versa, in steps or intervals in which the differences of tone are not too decided, and after they have become dry, blending or mixing the tones together by a few light brushing movements from a clean moist brush. The student should use careful judgment as to the selection of either method, for if the area to be blended is of small extent, the latter method may be used to advantage, but if a large area is to be worked upon, the former, or direct method, is best for the purpose.

In vignetting with opaque, it will be found advisable to lay on a preliminary coat of white pigment somewhat larger than the space to be occupied by the vignette. When this undercoat of white is dry, the medium tone may be applied in its proper place according to the desired extent of the vignette, and its edges carefully blended or mixed into the white undercoat by a moist clean brush, which should have first been washed out in clean water and the surplus water squeezed out of it so that the brush is only moderately wet. This operation may be repeated with the next darker tone on top of the medium tone below, but care must be taken not to overdo the mixing, otherwise the white undercoat may be disturbed and make its appearance on the surface in the form of streaks.

Some artists blend the opaque tones together by carefully stippling, or cross-hatching the darker tone on top of the lighter so as to gradually merge one tone into the other.

Extra practice on waste pieces of paper, as previously mentioned, will help considerably in accomplishing results where shading and blending are needed in photo-retouching, or any other class of work where opaque pigment is used.

As a suggestion, draw with your compass two circles, either in pencil or ink, which will represent the inner and outer outlines of an automobile tire, afterwards applying the opaque and carefully blending it so as to present a correctly shaded

study of the object. This will afford excellent blending practice, which may be varied by selecting other subjects, such as a shaded cylinder, sphere or ball, or in fact any object with a rounded or curved surface suitable for shading, or applying graduated tone. Apply yourself to as much of this practice as possible, for it is very helpful to you in acquiring proficiency with your brush in free-hand shading, and is extremely necessary in photo-retouching regardless of the fact that air-brush work is easier of accomplishment.

Work to be Submitted

On charts 2 and 3 we are showing the reproduction of photographs which have been retouched. We have sent you the photographic prints of these examples just as they originally were before being retouched. You are to mount these photographs as previously described, and retouch them according to the following instructions, producing the same effects as shown in the chart reproductions.

We will now proceed to take up in turn each of the subjects to be handled by the student, starting with Fig. 1 on Chart No. 2.

Fig. 1, Chart 2—Sprinkler

In the handling of different surface treatments, the retoucher will find that one of those most frequently used is that of the representation of galvanized iron. The example we present is the ordinary watering pot or sprinkler used in the garden. In a catalog of hardware, photographs of such utensils and many others of similar nature, form a large portion of the contents, and would have to be handled and improved by the retoucher.

The instructions on retouching this photograph of a sprinkler are, for you to smooth up surfaces, true up any parts that may appear bent, line up generally, bring out all detail clearly, and work over the entire surface so as to imitate galvanized iron, with the exception of the two dark lines, which, on the sprinkler, are two bands painted in a dark color. It is to be an outline cut, but the background having been removed on the negative, it will not be necessary to paint it out with white, as we have instructed on other examples. Carefully line up and detail the handle, taking care to follow the curve exactly, so no unevenness will show. True up the top and remove the dent therein, bring out the indented portion just below the top band of paint, bring out clearly the details around the spout of the sprinkler, and then work over the entire surface of the utensil so as to represent galvanized iron, in the same manner as we have shown on the retouched example (Fig. 1.) This is really very simple to do, once you have acquired the method of working. It is merely a matter of using the brush with rather stiff color, making little

dabs or pointed strokes, some dabs being at right angles to others; using white in the high light portion, and dark grey in the darkest shade, with light grey in the medium shade. By handling the color intelligently you can obtain the rounded effect very easily. Follow the copy carefully and you will produce an excellent imitation of galvanized iron that will reproduce very well, especially when it receives the reduction that is generally given to copy for half-tone engraving. This system of imitating galvanized iron is the manner in which you must always represent that surface, both now and in any future retouching. Be careful not to make this brush effect or technique any coarser than we have shown on the chart figure.

Fig. 2, Chart 2—Automobile

This illustration is typical of the average automobile photograph sent to the artist for retouching, and the instructions for handling this will be as follows:

- 1st. Remove all the background for an outline and vignette cut.
- 2nd. Smooth up tires.
- 3rd. Remove all reflections on body of car.
- 4th. Line up generally and smooth up all body and top of car.

After pasting and mounting on a piece of cardboard as previously explained, moisten a small wad of cotton with saliva, and rub it thoroughly over the entire surface of the photo to remove all grease, so you may have no difficulty in applying the color for retouching. We explained this operation previously, but refer to it again, as it is a very necessary procedure, and should be followed in every case, no matter how small an amount of retouching has to be done. The reason for this is, that the entire surface of the photograph should be freed from grease, for it very frequently happens that a photograph, after being retouched slightly according to instructions in some certain part, may, after the customer has seen it, be returned for more retouching than was at first intended. Unless the photograph had been prepared all over there would be some difficulty in doing additional retouching, and also the possibility of disturbing the present retouching by attempting to prepare the surface for the additional work.

The instructions call for this photograph to be prepared for an outline and vignette cut but as the background has been removed on the negative it will only be necessary to introduce the vignette as on the chart example.

You may now proceed to lay in your opaque color in the same tones as the retouched sample, illustrated in Fig. 2 on Chart 2. Do not use your color too thin. Before laying in your color, carefully indent all lines of striping around doors and all other lines of location, so you may be able to

find them after you have washed over them with opaque color.

This process of indenting is done by going over all lines that are to be preserved, by means of a hard pencil which is pressed on the surface of the photo sufficiently to leave an indentation. This will show through any color you may apply and will enable you to locate all your lines of striping, etc. You may rule or draw lines above the indented lines in finishing the completed drawing. Having laid in all your tints carefully, blending when necessary, put in solid blacks where shown, and line up wherever necessary, using the black for that purpose. Flash the glass in back of autotop and also the glass wind shield. The representation of glass, in illustrations of mechanical subjects, is given by imitating the reflections that glass gives, by means of sudden or snappy brush strokes. For instance, the glass in an automobile wind shield although transparent, will give reflections that will, in places, slightly disturb its transparency. These reflections are not decided enough to show any special form unless closely observed, and are best represented by brush strokes as mentioned, which, however, must not be too harsh or pronounced, either in tone or technique, and should be softly blended in some places, and have sharp edges at others; the manner of doing this largely depending on the individuality and whim of the artist.

Work over the details of the car carefully, lining them up and carefully comparing your work with the copy so that no part may be overlooked. Carefully note the difference between white, and the gray color used in the detailing, using white only where white is shown on the copy. After you feel satisfied with what you have done you may proceed to put in the ground shadow or vignette, which will complete the job. Always bear in mind, the fact, that if your retouching is not satisfactory, you can easily wipe it off with a moistened wad of cotton and start all over again. But in wiping off color it is better to remove it from the entire section. You will then have a better surface to work over and be more likely to make a cleaner job.

In regard to working up the tires, this must be done very carefully and delicately. There is not a great deal of shading to them, especially on the rear tires, and the best plan will be to lay in a flat light tone all over, then work your shading in a slightly darker tone on top of your light undertone, carefully blending them together, as shown in the copy. The rear tire will be comparatively easy to handle, on account of the non-skid pattern around it, eliminating the necessity of blending.

In this subject or any other, it is always advisable, when the existing photographic detail is good

enough, to leave it un-retouched, if you cannot improve it. This would be the case with the auto wheels excepting the tires. The original rims, hubs and spokes need no retouching except necessary lining-up on their edges.

Never use a lead pencil in retouching, for the luster on the indented lead may reflect the light and cause, in the reproduction, an opposite effect to that which you desire, appearing light instead of dark.

Fig. 3, Chart 2—Gears

Geared wheels form an excellent study for practice in retouching. They are generally very much in evidence in all heavy machinery and are interesting subjects for the retoucher, especially in regard to light and shade. Our photograph shows a group of large gears photographed on the floor of a mammoth machine shop. This photograph will be retouched to form an outline cut, with a little floor shadow handled as a hard vignette, or, as we have referred to it elsewhere on Chart 1, a snappy vignette. This will necessitate painting out the background with white and drawing in a post, as shown, against which the larger gear to the right will be leaning. Grain this post to imitate heavy timber, as shown in the chart example of the subject. There is a sunlight effect which must be eliminated, also as shown in our chart example.

To paint out a background in white, it is necessary to work very carefully up to the outline of the subject and try to lay your white as smoothly as possible. This may seem to be quite a trick, but by perseverance and practice you will eventually master it and be able to make quite a smooth job.

After you have painted in your white background, you will find that you can more readily see how your subject will look as you lay your tones. By eliminating the background, you eliminate confusion and are able to see and judge more clearly what you are doing. Do not bother about the ground shadow or vignette; the handling of this can be kept till the last.

In retouching these gears there is not much effort made at blending tones, but they are retouched mostly for strong effects. Watch carefully the light and shade. The light is coming from the left-hand upper corner, and the retouching must be handled accordingly. Use pure black for the deepest shadows. The prevailing tone is a dark grey, with a darker grey for deeper tone, and a light grey for those parts nearest the light, finishing with pure white for the extreme high light.

In painting out the background with white you will notice on the extreme right a portion of a pulley wheel overlapping the big gear. This must be removed, both in the background and on the surface of the gear, which must be retouched so as

to make the gear whole and complete. These gears are a subject worthy of considerable attention, and it will be well to give them plenty of time and thought. If, after retouching, they do not appear satisfactory to you, clean off the photo and start afresh, until you feel you have approached very closely to the desired effect, as it appears to you.

Fig. 4, Chart 3—Building

This represents a very usual type of building that comes to the hand of the retoucher for a few items of improvement. The instructions on this piece of work are summed up as follows:—

First—Retouch for square finish; remove the sign on top of the building and all wires, but leave the trees to left of the photograph.

Second—Remove the moving picture theatre sign at the right side and take out the two telegraph poles.

Third—Clean up windows and line them up; remove all wires in front of building, except those supporting the bank sign that project from the second story.

Fourth—Line up generally and put a little more snap in photo.

Fifth—Clean up street and sidewalk and line up street car track.

To carry out these instructions paint out all the wires, signs and sky with white, working up to the edge of the building cleanly and carefully. It will be well to rule a white line around the sky line of the building before you paint out the sky. This will assist you in making a clean job of it; then paint in your white up to this line.

In removing the telegraph poles and wires, also theatre sign, carefully mix up your color to match the color of the photograph, as we have already explained elsewhere, and neatly and smoothly brush out those portions that are to be removed. This should be so well done, both in smoothness and matching of color, that, at a casual glance, the removal of these parts will not be very noticeable. While this sounds hard to do, it is not such a difficult matter as it seems.

To clean up the windows, as called for, handle them exactly as shown on the retouched copy, Fig. 4. Two of the windows that show the upper sash pulled down should have this sash shown where it belongs; that is, in the upper part of the window. All the fly screens must be painted out, then line up the sash, using white and black lines. Paint in the glass of the upper sash with a light gray tone and fill in the lower sash with a dark tone. This will give an appearance as of the shades being drawn down half way, the dark color representing the space below the shades and giving more snap and color to the photograph. "Snap," as we have before explained, means contrast, or strong darks

and lights, and renders the subject more noticeable and attractive. The more strongly noticeable and attractive we can make our work, the more valuable it becomes as an advertising proposition, the value of which is entirely governed by the amount of interest its strong attractiveness causes.

In lining up this photo, you may use pen and ink, ruling lines where all shadow lines now exist and thereby strengthening the detail. Do not attempt to rule lines by using ink or diluted opaque on any surface that has been retouched with opaque. Opaque is very absorbent, being similar in this respect to blotting paper; only opaque of heavy consistency, retouch brown, or similar pigments should be used for ruling on opaque, otherwise the ruled lines will spread, smear and cause blots. Clean up the street and sidewalk with light color, as shown in the retouched copy, and with a little lining-up of the street car tracks our building photo ought to present itself as a fairly good example for half tone reproduction.

Fig. 5, Chart 3—Chair

In the retouching of furniture subjects, one of the most important things to do is to bring out the character of the grain. To the manufacturer of furniture this is such an important matter that many schemes are resorted to in order to make the grain show to the best advantage in the photograph. For such purposes some pieces of furniture are photographed before being polished, especially if they are of wood that is dark in color, as the polish generally makes the wood appear so much darker in the photograph that the grain appears very indistinct. It is very seldom that a photograph of furniture, showing the grain of the wood from which it is constructed, is considered good enough for reproduction without first passing through the hands of the retoucher. The subject we have here is that of a dining-room chair of solid and sensible design, constructed of what is known as quarter-sawed oak. This is a very popular wood for certain kinds of furniture, and the peculiar character of the figures in its grain makes this wood very pleasing to the majority of people. It is very odd in character and entirely unlike the grain of any other wood. Consequently the maker of quarter-sawed oak furniture generally likes to have the grain retouched well enough to bring it out to the best advantage. The chair in question is constructed of fumed oak which is very difficult to photograph on account of its darkness of color; hence the great necessity for the retoucher's skill. To reproduce on a photograph the effect of quarter-sawed oak is a job that requires a good deal of study and thinking, and it will be to the advantage of the student retoucher if he will carefully observe this grain on any furniture that may come under his notice.

Wash in two or three square panels of dark color on cardboard, and with light gray color try to follow carefully the markings of this grain as it appears to you on the furniture and make several examples of it before attempting to retouch the chair photograph. It is worth while to put a good deal of study into this imitating of quarter-sawed oak. When you feel somewhat satisfied with what you have accomplished in your practice work you may start out on the chair.

Professional retouchers frequently render excellent grain effects on photographic prints, by scratching away the dark tone in accordance with the figure of the grain, using the frisket knife described later in "Air-Brush" work, or a small keen-edged knife known as a scraper. This scraping process exposes the original white surface of the print and produces the grain effect in either a light tone or in white, according to the depth of the scraping, but should not be attempted by the student in his work on this lesson. Furthermore, he should not attempt this treatment on any other work until he has become familiar with the characteristics of the grain he is representing, for it is difficult to correct mistakes or to make changes afterwards without damaging the surface of the print.

Most furniture photographs have the background blocked out on the negative, and the print shows the piece of furniture on a white background. This has also been done in the case of this chair, so you will not have to paint out the background. First take notice of the light and shade of the object and darken the dark or shaded side of the chair, making those parts on the under side farthest away from you very dark indeed, in fact almost intense black. Follow the copy very closely in regard to this light and shade, otherwise your work will be too flat in tone and the construction of the chair will not be understood. Having accomplished the shading, you may take up the graining, using various tones of gray for that purpose; dark gray in the shaded parts and lighter gray in the lighter parts. In the lighter parts make the grain very strong and keep it subdued in the shaded parts. In the very darkest parts the grain should be scarcely visible, otherwise we will lose our light and shade by overwhelming the subject with too much grain.

If the student has faithfully studied this subject of grain and practiced the drawing of it carefully, he should, with the assistance of the retouched copy, be able to make a fairly good rendering of this quarter-sawed oak dining chair. By a good deal of practice a retoucher eventually becomes able to represent any kind of grain that may be desired without reference to copy of any kind, or, at least, give a fairly good representation of it. It is always advisable, though, for the

student, should he come across any good copy showing the various grains of wood, to keep them for reference, for he may find them very useful as well as interesting.

Fig. 6, Chart 3—Landscape

The retoucher frequently has to handle photographs of subjects of more or less artistic character; that is, subjects that are not so mechanical in their nature as furniture, machinery, etc. This will give the artist a little more chance for originality and individuality, especially if he is more inclined to indulge his talent in that direction. In such a class may be placed the handling of landscapes, on which a little artistic addition and vignetting may have to be performed to fit the subject for some certain purpose of illustration. The example we present for treatment is of that order, and the instruction will merely be to add sufficient vignette at the bottom, so that the photograph may print at the top of the page and the vignette extend down toward the type matter below.

If the student is inclined to an artistic understanding of things he will see how suitably such things as water, sky or a road lend themselves to forming a vignette. Any part of a landscape suitable to be extended from or out of the picture, such as those portions referred to, are ideal for the purpose of vignetting. The stream of water coming toward us is vignettted or blended out into the white paper. As there are already a few rocks in the water, we are keeping quite close to the character of the scene by adding a few more rocks, which we may easily imagine would actually be there if we could visit the spot and see for ourselves. These rocks, being closer to us in the foreground, may be drawn somewhat larger than the others, and we may also add a few reeds and rushes on the left side to form a balance against the large tree on the right side.

The vignetting of the moving water with its swirl and reflections, affords a very good opportunity for the student to use his imagination and individual ideas in handling such a subject. We would suggest that if any similar scenes exist in the neighborhood, it would be very desirable for him to visit such spots and make sketches of the action of the water, or any other details that would assist him in working up this, or any similar subject. The student must not confine his study of retouching barely to the examples we send him but obtain as much outside practice as possible. As we have before explained, the retouching of photographs should be done in a very natural way, and a little sketching from life, done true to life, will help considerably in giving him the necessary ability to retouch a photograph and make it look life-like. It will not be necessary to do any further retouching to this landscape photograph.

It is quite good enough as it stands. The little addition and vignette at the bottom is all that is necessary to make it a suitable subject for the purpose for which it was intended.

These six photos comprise your retouching lesson. Do not hurry over them but take sufficient time to do the work well and thoroughly; when all six subjects are finally completed send them in for criticism, but send them all in at one time. This section is a very particular one, as it is especially designed to assist the student to accomplish very careful work, so you must endeavor to work with considerable care, in order to make these subjects acceptable. It is the little details that count, in making a satisfactory job, whether it is retouching or any other kind of commercial art, and in giving our students the necessary training, we have to insist on a certain amount of careful, earnest work at the very beginning. We do not expect that all will desire to become professional retouchers, although many do, for it is a good and profitable field, but in order to steady the eye and hand, to give good practice in the handling of opaque, and to discourage any tendency to careless and sloppy work we desire our students to give particular attention to the work in this section.

Introduction to Air Brush Work

Before taking up this portion of the section dealing with the use of the air brush, we wish to state, that so far as a general commercial art course is concerned, the use of an air brush is not absolutely necessary. Therefore, although our section on photo retouching gives complete instructions for the use of this instrument, we do not include it in our equipment. If we did, at least \$50.00 would have to be added to the cost of the course, and this would not be fair to a large percentage of the students, who would have little or no use for it, further than for working out the exercises in this lesson.

If the student finds that he is favorably inclined to the use of an air brush or finds opportunities open to him along that line of work, then the air brush portion of the lesson will be of great value to him. Work on this portion of the lesson is entirely optional with the student, as is also the time at which he wishes to take it up. What we desire is, that the student carefully read through this section so that he may completely understand the use and application of the air brush and also know where it would be of help to him.

If he has access to an air brush, even though not greatly interested in mechanical work, it will pay him to work out the problems at this time. However, as all work in this lesson, not included in the air brush portion, is to be done *without* the use of the air brush (as is also all work of the other

lessons), it is not necessary that he work out the air brush problems now or later.

The Air Brush

This article will deal with that mechanical art tool, the air brush, only as it is used in commercial art work. It is used in other lines of work, such as sign painting, portrait enlargements, etc. It is also used in its largest sizes for applying paint to walls, etc., and various other purposes in manufacturing industries. In regard to its uses in commercial art, we will state that in no other manner is it possible to distribute so evenly and thoroughly a layer of color on a drawing or photograph as can be done by the air brush.

In retouching it is useful whenever a very smooth tint is required. In general illustrations it can be used to smooth up rough wash work, or to put in backgrounds in either opaque or transparent color.

As a matter of economy and efficiency, this tool, in the hands of an artist, can accomplish perfect work in a few hours that, without it, would take weeks to execute, and be of far inferior quality.

This tool is the result of much experimenting and thought, extending over many years, and its construction is rather delicate, involving a number of small parts. It should be handled with considerable care, like any other delicate instrument, and particular pains must be taken to keep it very clean by carefully washing it out after using, and never allowing any unused color to stay in the brush when it is set aside for any length of time.

Should the thorough washing-out be neglected, you may have considerable trouble next time you use it, on account of its becoming clogged with dried color. With just a little care and cleanliness you will find the brush workable whenever you desire to use it.

All air brushes work on practically the same principle; that is, compressed air blows a very fine spray of color from the point of a fine needle to the surface of the drawing or photograph being worked upon. The closer the air brush is held to the work, the finer the line of color will be, increasing in width of line as the air brush is lifted away from the surface. A valve on the air brush, that is operated by the pressure of the forefinger, controls the volume of air passing through the brush. A very slight pressure permits a small quantity of air to pass through the brush, allowing the making of a fine line of spray, while more pressure permits more air volume and causes the brush to work at full capacity. The air, in passing around the point of the needle, causes a suction, which draws the color through the brush from the color cup, allowing the air pressure to blow it upon the work in a fine, almost invisible spray.

The volume of color passing from the air brush

is increased by the action of the forefinger in pressing down and backward at the same time, thus drawing the needle back from the point and allowing more space for the color to pass through; hence, more volume of color. This action is entirely at the will of the artist; the more he presses back the valve lever, the more color is blown out, and the less pressure he gives the lever, the less color is discharged. This action, combined with the distance of the air brush from the work, explains the whole action of the tool in producing a fine, small line or in covering with tone a larger surface. Various makes of air brushes are operated differently, but the principle is practically the same, and the same results are produced by slightly different methods.

This continual passing of color over the point of the needle eventually wears the point and causes it to lose its sharpness, together with its ability to do very fine work, although not interfering with its performance on larger areas. When the tip of the needle is thus worn, a new needle can be substituted at small expense. Some artists are able to sharpen and renew the point of a worn needle, but to an amateur it is rather a difficult operation, and the best plan is to purchase a new needle; in fact, one should always have a new needle on hand for cases of emergency.

The space through which the color passes, around the needle, is quite small, and the color used should be thin enough to pass through this space easily. Color of the same consistency as that of drawing ink or even slightly thinner would be correct for use in the air brush. A reamer is generally furnished with the air brush and may be used sparingly should the instrument become badly clogged. It is possible, but not advisable, to use fixative (a mixture of shellac and alcohol) through your air brush, but if you do this at any time, you should pass alcohol freely through the color-cup and blow it through the brush immediately after using it. It is not a good plan to use an air brush working with water color for any other medium than water color. Always remember that the main thing, in caring for an air brush, is to keep it thoroughly clean and well washed out at all times.

In regard to using the reamer, we believe that it should only be used as a last resort. When cold water will not clean out the instrument, use warm water, or even diluted ammonia. Should the brush remain clogged, and unworkable, take out the needle, fill up the cup with clean water, carefully insert the reamer, and turn it a few times, meanwhile pressing on the valve in order to blow the water through the brush. This generally succeeds in removing obstructions.

Spattering or spitting from the air brush (as it

is called) is caused, either, by the color in the cup being too thick, or by the cup being partly clogged. This will very easily happen if color is allowed to dry in the cup, because of the gum which forms a part of all water colors and which, when dry, becomes very hard and clogs the cup badly.

If the air will pass through, but no color passes, either the cup is clogged or the tip-opening is choked and they must be cleaned out as we have before explained.

If, upon pressing down the valve, no air passes through the brush, either the air passage is obstructed with foreign matter—it may be dirt—or something is wrong with the valve itself. These matters can be looked into by taking the instrument apart.

Before attaching the air brush to the rubber air tube, it is always advisable to allow the air to blow through the rubber tube in full force, so that any obstruction or dirt may be blown out. In the case of using new tubing, this is especially necessary on account of the loose, white powder with which the rubber tube is coated. In damp, humid weather it is necessary occasionally to disconnect the instrument, and blow out the moisture which condenses from the air and collects in the air pipes. It is better to have an air pressure that is uniform than to have one that varies. A pressure of from 25 to 30 lbs. per sq. inch is about right for average air brush work. Where considerable work has to be done, either an electric pump should be used or a carbonic gas outfit. Dust and dirt should be carefully kept out of the color one is using, especial pains being taken to prevent loose hairs from water color brushes getting into the color cup and clogging up the air-brush passages. Always protect the end of the needle from being touched, as it is very easily bent or damaged by coming in contact with anything. If the needle point, which is extremely fine, becomes bent, it will cause the spray of color to be coarse and uneven. It is a good plan, when purchasing an air brush, to secure a protecting cap, which slips over the tip of the air brush and protects it from damage when not in use.

There are three systems for compressing or furnishing compressed air for the air brush.

These are the foot pump, which is almost obsolete at the present time and not worth discussing; the carbonic gas outfit and the electric pump.

The carbonic gas outfit is a narrow, upright steel drum containing very highly compressed air, sufficient to supply one air brush for a month or six weeks, using it three or four hours a day. It is a very economical outfit and quite popular among artists who just need the use of compressed air occasionally. These compressed air drums are

furnished with a reducing valve and gauge, so that one can reduce the very high pressure down to a lower workable one. In using the carbonic gas outfit, it is necessary to open up the drain cock about once in three months and blow out the accumulation of moisture and other matter. This will keep the inside of the drain from rusting and, by getting rid of the undesirable, greasy water; save the working parts of your air brush from contamination, and perhaps prevent a few grease spots from soiling your art work.

A few instructions are necessary in order to successfully handle the carbonic gas outfit and avoid any trouble therefrom. Remember, the drum as received from the company which supplies them, is charged with a very high pressure, and while there is no danger in its use, at the same time certain instructions must be followed. In the first place, when you connect the reducing valve to the drum, use one or two washers in the connection, so as to prevent any leakage. After making this connection, close the air cock on the regulator (which connects with the air brush tubing) and screw downward or outward the regulating screw until all pressure is removed from it. If this screw should accidentally be withdrawn, you must replace it, giving it a couple of turns inward until some back pressure is felt. Next, turn on the gas with wrench by opening the valve in the top of the drum. The valve is protected generally by a large hexagonal ring enclosing it and has a square stem about five-eighths of an inch wide. Your wrench has a square opening at about the center of it, while the openings at either end are used to attach the regulator to the drum. After the gas has been turned on, frequently no pressure will show on the gauge, owing to the fact that the regulating screw has relieved all pressure. If the dial shows any pressure, wait until the indicator stops moving before increasing the pressure. The pressure is increased by screwing the regulating screw to the right and slowly inward. The more the regulating screw is turned inward, the higher the pressure becomes. This operation must be done very slowly, so you do not increase the pressure above what you need, which is between 20 and 30 lbs.

The most important matter in this whole business is never to screw *outward* the regulating screw or valve seat while *any* pressure shows on the gauge dial. Otherwise you are liable to seriously damage the whole outfit. As an example, if you want a pressure of only twenty pounds and the gauge shows thirty pounds, immediately shut off the gas at the drum. Do not attempt to get a lower pressure by screwing the regulating screw outward, until the gas has been shut off completely at the drum, and allowed to exhaust in the regulator, by opening the air cock to the rubber tube

which leads to the air brush. When this pressure is exhausted no pressure will show on the dial of the gauge and you may proceed again, as you have just been instructed, to obtain the necessary air pressure.

After the regulating screw has been adjusted to a certain pressure, which will show on the dial of the gauge, it will never again be necessary to readjust the regulating screw. You may now connect up your rubber tubing from the air brush, and, by opening the air cock, are ready to work. It is always advisable, when you are through work for the day, to shut off the gas at the drum, in order to check any gas leakage that might be possible.

By following the foregoing instructions, the student will never have any difficulties in using and handling the liquid carbonic gas outfit for obtaining compressed air.

The electric air pump is very useful when several artists are to be supplied with compressed air.

This outfit consists of a motor connected to an air pump and generally has an automatic cut-off, which can be set so the electric current will automatically be shut off when the air pressure reaches a desired point. This automatic cut-off can be adjusted to cut off at any desired pressure. The connection can be made by the regular standard plug to any electric light socket. It is a good plan to turn off the current when the pump is not in use. The combined motor and pump should rest on a firm foundation. A piece of board about one and a half inches in thickness and of the necessary length and width makes a first-class foundation base. To deaden the vibration caused by the motor and air-pump, a sheet of felt, rubber or carpet should be placed between this foundation and the floor. An ideal arrangement, which will keep out dust, etc., from the pump and motor, can be made of wood planks built in the form of a closet just big enough to enclose the apparatus, and with a door placed so one can get at the mechanism for oiling, etc. The bearings should be oiled daily when the machine is in operation; not much at a time, but frequently. A few drops of oil in each bearing once a day is ample. The motor is generally supplied with grease cups and does not need oiling when so supplied. The grease cups should be examined about every three months and, if necessary, be refilled.

The belt connecting the small motor pulley with the pump fly-wheel sometimes becomes loose on account of its stretching, causing it to slip when the motor is started. Should it do this, the belt should be tightened, either by shortening it, or by loosening the bolts that fasten the motor to the base, and pulling back the motor far enough to

tighten the belt, then tightening up the bolts, which generally work in slots in the motor base, allowing this to be done.

Preparing The Work For Air-Brush Treatment

We will now take up the matter of retouching photographs by the air brush. After the surface of the photograph is prepared for retouching, as explained elsewhere under the head of retouching, a sheet of prepared frisket paper is laid smoothly on the face of the photograph and rubbed down very carefully to make a smooth, even contact all over the photo. Frisket paper is a very thin, oiled, transparent paper, used as a stencil paper, and may be purchased in sheets from most dealers in art materials; this must be coated on one side with a liquid preparation of rubber which is dissolved in benzol to about the consistency of syrup. The art material dealer usually has on sale a suitable rubber cement. While most of the high-grade makes work well, not all rubber cement will do, as some have a tendency to stain. The B. F. Goodrich Co.'s Rubber Cement No. 4 has been found very satisfactory. Some artists prefer to prepare their own cement. Pure Para short fibre rubber must be used. It is cut into small squares and added to the benzol until the proper consistency is reached when dissolved. A sheet of the paper is coated on one side with this liquid rubber by means of a large, flat brush. Quite a heavy coat should be put on, because, when it dries out and the benzol has evaporated, there will be quite a thin coat of rubber on the paper. When it is to be used, it may be necessary to take a small wad of cotton saturated with benzol and lightly rub over the surface to soften up the rubber so it will be tacky enough to adhere to the surface of the photograph. After being rubbed down smoothly, cut stencils with a very sharp knife point for those portions where the air brush is to be used, and remove from the different parts all that has to be done in one certain tone and repeat the process for the other tones; your color should have been previously mixed for the different tones as explained elsewhere under the head of retouching. On removing that part of the frisket paper or stencil where you are about to work, lightly rub your finger with a rolling motion over the surface to remove any particles of rubber that may adhere to the print. As a rule, when you lift the cut-out piece of frisket paper off the photo, it leaves the photograph quite clean and free from rubber. It is a good plan to lightly rub the finger over the surface anyway, to be sure that no rubber is left there, otherwise your color would not adhere to the photo in those places where any rubber may not have been removed. This rubber is absolutely harmless to any photo or drawing if

it is mixed right and it should leave no stain or blemish on the work.

The small details are generally finished in free-hand with a small brush. Professional retouchers generally use a frisket knife for cutting frisket; it consists of a wooden handle a little larger than a lead pencil, with a steel strip inserted in the middle of it. This steel is about $\frac{3}{16}$ of an inch wide and is sharpened on an emery wheel to a long, tapering V-shaped point, sharp on both sides and kept very keen by rubbing on an oil stone. Care must be taken to cut through the frisket with a very light pressure so as to cut through the frisket and its coat of rubber only, and not cut or damage the surface of the photo. This sounds difficult, but with practice is easy to do. Any small-bladed knife, such as the small blade of the regulation pocket knife, will answer very well as a substitute for a frisket knife, provided the point is kept with a good, keen, cutting edge.

Chart 4, Sec. 3—Air Brush

The chart accompanying this section gives a few examples of work done by the air brush, which will be explained consecutively. These examples show, in an elementary manner, the various kinds of work that may be accomplished. A volume might be filled with illustrations of work that have been executed by means of an air brush, but outside of the fact that it would be very interesting on account of the variety of subjects, the student would learn no more of the way in which the instrument would be handled, but, in fact, would be bewildered with the assortment. Keeping in line with our policy of showing how to accomplish things in as simple a way as possible, we present to the reader these various methods of working, feeling sure that if he will give the necessary study and practice to them, he will be on the right road to success. Any future work he would undertake to handle would be nothing more nor less than repetition or combination in some form or other of the examples we herewith present.

In regard to the various makes of air brushes, we have illustrated in Figs. 1, 2 and 3, the three leading makes of air brushes, which are the Wold, the Fountain, and the Paasche. As to which is best to use, we will say that each kind will do good work, and each would probably have a good word spoken for it by the artist using it. A great deal depends on one's getting used to the instrument. After one has become familiar with the workings and handling of his air brush, he feels more sure of what he can accomplish with it, and certainly can do better work than he could when he first started out. This is true of everything, but it is especially true of an air brush, which is a delicate piece of mechanism and requires a little

practice in order to get thoroughly acquainted with it.

Figure 4 is a rectangular form shaded dark at both ends, blending down to a light center. You will notice that the top end is shaded darker than the other end.

Figure 5 represents a panel shaded from dark at one end to light at the other. The principal point to be followed in this and in Fig. 4 is to make the blending of tone even and gradual.

Figure 6 shows a panel of even tone. The student should endeavor to apply his color very evenly in this example, as it is important in the majority of cases that an even tone be laid. It is not an easy matter to apply an even tone, especially if the area being covered is a large one. Backgrounds for posters are frequently handled in this way, and great care must be taken to avoid any unevenness of appearance. Work in a good light so you may see well what you are doing, for a poor light is deceiving if you are covering a large surface, and especially if the color desired is not a very dark one. A light, transparent tint is the hardest to handle, while dark tints are easiest—that is, from the point of evenness of color.

Figure 7. This is a photograph of a polished copper percolator, such as would be illustrated in a catalog of household goods, and is a fair specimen of the average quality of photograph furnished to the artist for retouching.

Figure 8 shows the retouched photo originally represented in Fig. 7 and illustrates to a remarkable extent the transformation given by a skillful use of the air brush on such a subject. By careful observation the student will see where and in what cases it will be necessary to bring up the detail by the freehand brush. Observe carefully the direction of the light, which in this case is on the right side, so that the necessary high lights may be placed in their correct locations.

In air-brushing this photograph, frisket paper must be used to localize our air brush work and protect those other portions that will be handled later. We have already described elsewhere in this section the use of frisket paper. After the details have been carefully worked up and the air brush work on the body completed, protect the work with frisket and put in a background somewhat on the order of the one we show. As we have before explained, backgrounds are of no set style, but are largely left to the originality of the artist.

Figure 9 represents the shading of a sphere or ball. This is a matter that requires careful execution. Carefully blow in the shade required, leaving the necessary reflected light on the left hand side. Be careful to show the high light in the

proper position, letting the white of the cardboard or paper show through sufficiently to form this high light.

Figure 10 is the representation of a shaded cylinder. This is high-lighted on the left side. In blowing in the shade, be careful to leave the reflected light on the right side, and upon completion blow in a little dark vignette on each side, as shown in the example.

Figures 11 and 12 show a shoe drawing in two stages. The outline drawing of the shoe (see Fig. 12) is made in pencil and carefully inked in. After being cleaned off with the rubber to remove pencil marks, cut a frisket and carefully blow in the

necessary shading for the cloth top and for the leather vamp, finishing up the laces, eyelets, the necessary stitching and high lights by hand. If one will study shoe illustrations it will be noticed that there is a standard way of making these drawings which has been adopted to suit the special needs of the shoe trade. It is not a difficult matter, however, for a beginner to understand this standard way and with a little practice he should be able to make very creditable drawings. These drawings must be clean-cut and sharply drawn, and also carefully and precisely shaded, as may be noted in any good catalog of boots and shoes.



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